

Sustaining Today's Force Structure and Building the Future Force

Presented to the Surface Navy Association

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SNA Symposium 15 January 2008

2008 Strategy Goals:



Decouple hardware from software



 Componentize combat systems architecture and common information standards government owned architecture and interfaces



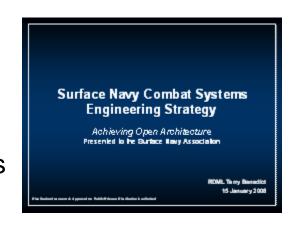
Establish a combat system product line approach based on a common objective architecture



— Decouple combat system development from platform development while continuing to accommodate platform specific needs



Compete where and when appropriate





Looking Ahead to Advanced Capability Build (ACB) 12 and Beyond

- Combat Systems must transition to a network-based COTS Computing Environment to support future warfighting improvements
- System Engineering Guidance has been documented, will be updated based on experience
- We will continue the transition to a network-based COTS Computing Environment as fast as feasible
- Competitions are being conducted when and where appropriate

Increased computing power and network-based performance will enable significant combat system warfighting improvements



Surface Navy Combat System

Transition to Objective Architecture On Track

As of November 2009

- Decoupling of Software from Hardware on NIMITZ & BUNKER HILL completed
- NIMITZ final SSDS Software Cert completed June 09



- BUNKER HILL CSSQT successfully completed 30 July 09
- BUNKER HILL Software Cert completed November 09



2012

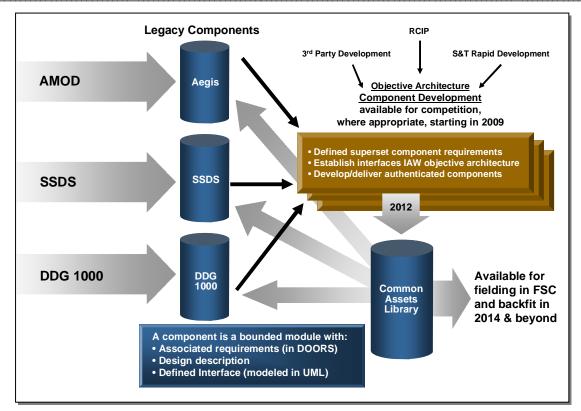
 Aegis modernization (ACB 12) component level interfaces delivered at CDR (1Qtr FY10) and with each delivered computer program build



 SSDS interfaces already documented at component level



 Small number of common components integrated in both Aegis & SSDS-ACB 12



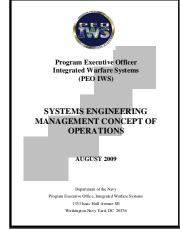
2014 - 2022

- Number of common components will increase with each ACB eventually moving to a common software core for all Surface Navy Combat Systems
- Required warfighting capabilities will determine which components modified

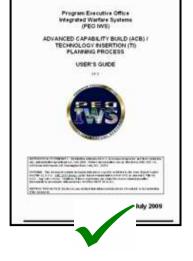


PEO IWS System Engineering Guidance





January 2010





SURFACE NAVY COMBAT SYSTEMS SOFTWARE PRODUCT LINE ARCHITECTURE ARCHITECTURE DESCRIPTION DOCUMENT VERSION LI

System Engineering Guidance to align PEO IWS' efforts beginning with POM 12



Surface Warfare Tactical Requirements Group (SWTRG) ACB Content Definition Process

- ◆ N86 defined Advanced Capability Build (ACB) content for the Acquisition Community
 - Informal, collaborative approach between Action Officers and PEO IWS SIPMs / MPMs for content definition and alignment

Branch Heads

Financial Input

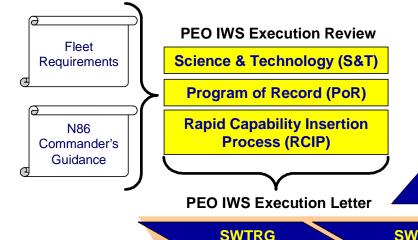
- SWTRG is formal content definition governance process
- ◆ N86 will document ACB content requirement via formal documentation (e.g., Commander's Guidance Letter)
- Approved ACBs will require resourcing to the approved requirement

Working Group

Action Officers

PM

Input



Required attendance for:

- 1. Air and Ballistic Missile Defense capability issues
- 2. Intelligence capability issues
- 3. Amphibious capability issues

ESG 4. Aircraft Carrier capability issues N86 (Chair) CNSL N6F ABMD 2 N22 3 N85 4 N88 N86E / N86F (Co-Chair)
CNSL N8 ACOS Requirements & Assessments N6F2 COTP Applications N6F4 Program Integration and Interoperability N6N1 Afloat and Shore Networks N862 Current Ships N864 Maritime Warfare Systems / Strike Warfare N865 Theatre Air and Missile Defense **N866 Combat Systems Integration** N867 Anti Terrorism / Force Protection / CBRN 1 PD-452 N22 Technical liaison to N86 N853 Amphibious Warfare Working Group N866 (Chair) 6F21 Operational C2 N864A ASW N867F1 ATFP/ EMIOVBSS N6F22 Tactical Picture N865G Missile Systems N864F Strike / Tomahawk nteroperability N865R Radars N864G Naval Surface Fi N6F413 C4I Requi N22 Technical liaison to N86 N866J IAMD / NIFGCA N853C Amphip Ship Req N865A Air Defense N6N1 ISNS / CANES N8660 OA / SFI N885D In-Service CVN N865B BMD N862C CG / DDG Mod **SWTRG SWTRG Executive** NCD Board of Directors **Steering Group** Annex (BOD) (ACB ESG) **Flags**



Major Warfighting Capabilities Delivered Through Advanced Capability Builds (ACBs)

ACB 08

Decoupled software from hardware with COTS

ACB 12

- Network-based COTS computing environment with significant computing performance improvements (AMOD)
- Common Processor System (CPS) / Common Display System (CDS)
- Common Track Manager / Track Server components in SSDS (CVN 78) and AMOD ships
- Initial MH-60R capability (CVN)
- Naval Integrated Fire Control Counter Air (NIFC-CA) (AMOD)
- Ballistic Missile Defense (BMD) Capability 5.0 (AMOD)
- SM-6 (AMOD)

◆ ACB 14

- MH-60R Control Common Components will be introduced into SSDS and Aegis Combat Systems Across ACB 14 & 16 as development funding permits
- Full ACB 14 definition under development in conjunction with POM 12



BIL 112131415

Aegis Weapon System Hardware Architecture Roadmap

BIL 6 Ph IIII BIL 7 Ph I ACB 08/TI 08

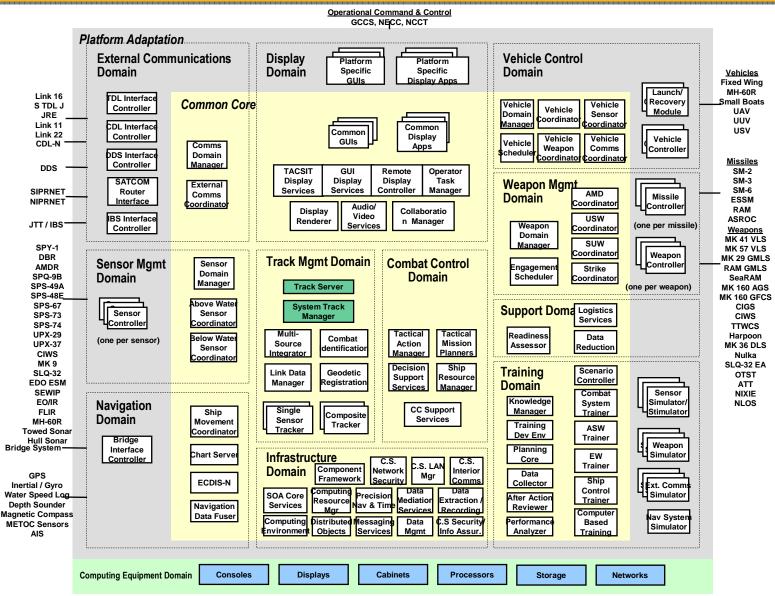
	Pre-Aegis	DDG 51-78 CG 47-73	DDG 79-90 CG 66 & 69	DDG 91-112 T	Advanced Capability Build (ACB) echnology Insertion (
Year	1960	1980	1994	2002	2009	2012	2016
Veapor System			-	The state of the s		CPS	CPS
	MIL Spec Design	MIL Spec Design	Mixed COTS and MILSpec Design	Mission Critical Enclosure (MCE) All COTS computers	(MCE) A Scaleable Pool of Interchangeable Processors	Common Processing System (CPS) & MCE A Scaleable Pool of nterchangeable Processors	Common Processing System (CPS) & MCE A Scaleable Pool of s Interchangeable Proces
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lormaliz quivale apabilit	ent 2 UYK-43	4 UYK-43	120 UYK-43	270 UYK-43	875 UYK-43	~2500 UYK-43	TBD
isplays	UYH-4	UYH-4 UYQ-21 (TGC)	UYQ-21/UYQ-70	Thin Client Displays	Thin Client Displays	Common Displa	ay Systems (CDS)
onnecti	ivity All NT	All NTDS Point-to-Point Point-to-Point Point-to-Point		o-Point	All Network Pub Sub	All Network Pub Sub	

ACB 12/TI 12

ACB 16/TI 16

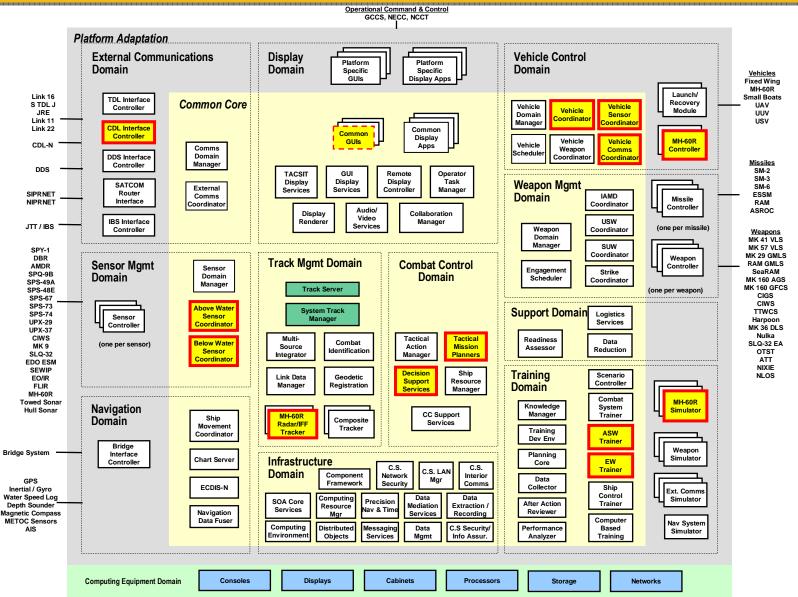


Surface Combat System Top Level Architecture (ACB 12) Common Track Manager / Track Server Components





Surface Combat System Top Level Architecture Phasing Common MH-60R Vehicle Control Components in ACB 14 Through ACB 16





Combat Systems Engineering Strategy Summary

- Transitioning to network-based COTS computing environment which enables significant computing and warfighting improvements in current and future force
- Establishing a Combat System based on a common objective architecture with products applicable to multiple ship classes
 - Government owned architecture and authenticated interfaces
- Conducting Combat System development through disciplined systems engineering principles and processes
- Future Surface Combat Systems will be created from existing and new development components